
Space Weather Forecast

Issued on Monday, 08 January 2024 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low activity with the strongest common class flare at 07/2225 UTC from a sunspot region departing over the southwest limb. There are nine other sunspot regions on the disc, with six of these in the northwest, including the previously active region that produced the Strong flare on Dec 31, although this continues to weaken. The most notable growth was observed by a region closer to the solar equator, however this maintained a simple magnetic configuration. Two further regions are in the southeast, and both continue to show some development. The northernmost one is the more mature spot, with only slow evolution occurring, while the southernmost one showed some more rapid growth in area, but remains the smaller of the two. No Earth-directed coronal mass ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Slow wind conditions, with background speeds observed (300-320 km/s). Interplanetary magnetic field was weak with a variable and weak north-south component. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) continued to gradually ease since their enhancement from the Strong flare on Dec 31, and remained well below the level of a minor radiation storm (S1).

Four-Day Space Weather Forecast Summary

Solar Activity: There is an ongoing chance of isolated Moderate flares due to the nine sunspot groups on the disc and a further region or regions soon expected to rotate on. There is a slight chance of Strong class flares.

Solar Wind / Geomagnetic Activity: There are two potential glancing CME impacts, one from 05 Jan, arriving day 1-2 (08-09 Jan) and another from 06 Jan, arriving day 2-3 (09-10 Jan), however these are both low confidence. Otherwise some interaction with the fast wind of a weak coronal hole remains possible day 1-2 (08-09 Jan), but this is likely to have only a very limited impact on observed solar winds. Quiet geomagnetic conditions are expected to persist for much of the period, but may rise to Unsettled days 1-3 (08-10 Jan), with a chance of Active, along with any CME arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to continue gradually easing, likely persisting well below the level of a minor radiation storm (S1). However further increases are possible with any notable flare activity.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	55	55	55	55
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						